4 - Service Tools

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List of Recommended Service Tools

New service tools for RAE-6/RA-4

Description	Note
SF-24, Point of sales flash adapter	
MJ-20, Module jig	
DA-21, Docking station adapter	
SA-61, RF-coupler	For the both RAE-6 and RA-4.
ST-27, Stencil for 4510453 / Z7600	
RJ-28, SOLDERING JIG	
SS-56, DISPLAY ALIGNMENT JIG	for PDA display alignment

The following spare parts are available for the tools.

Description	Note
MJ-20: 100GSS193.8G TEST PIN	PACK OF 10 TEST PINS
MJ-20: DE-50-T45-2.0-G TEST PIN	PACK OF 10 TEST PINS
MJ-20: 100 GSS 3 3.8G TEST PIN	PACK OF 10 TEST PINS
MJ-20: IHF speaker: 100GSS103.8G	PACK OF 10 TEST PINS
MJ-20: spare flex cables	One of each = 2 flex cables.
MJ-20: Spare fuse, 2A	PACK OF 10 fuses
SF-24, DA-21: TEST PIN SS-75-J-2.4-G (IDI)	PACK OF 10 TEST PINS

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Service tools reused from other products

The following tools are developed for other products, and also used in RAE-6 AND RA-4.

Description	Note
CA-28DS Service data cable	Mod10 – mod10/dc-jack, used in RA-2/3
RJ-46, Rework Jig for Z7600	Used in RH-37
RJ-71, Rework Jig for N4200	Used in RA-2/3
ST-26, Stencil for N4200	Used in RA2/3
ST-13, Stencil for N7700	Used in RH-37
RJ-21, Rework Jig for N7700	Used in RH-37

Standard and generic service tools for RAE-6 AND RA-4

RAE-6 and RA-4 are DCT-4 based products. The following standard and generic service tools are used for RAE-6 and RA-4.

- FPS-8 flash prommer
- FPS-10 flash prommer
- FLS-4S POS flash device, sales pack EMEA, APAC and US
- PKD-1 SW security dongle
- JBV-1 docking station
- ACF-8 universal power supply
- XCS-1 service cable, Mod10 to Mod10 cable with DC plug
- XCS-4 modular cable for e.g. connection between FPS-8 and SF-24
- PCS-1 power cable banana connectors to 5.5 mm DC plug
- FLC-2 DC cable, banana connectors to 3.5 mm DC plug. 1,2 meters
- CA-5S DC cable, Charger plug - Charger plug
- AXS-4 service cable, serial cable 9 pol. Sub-D (part of FPS-8 sales package)
- CA-10DS parallel cable, new version, BI-DI PAR CABLE
- DAU-9S MBUS cable, 9 pole Sub-D f <=> 8 pole modular connector
- SF-12 SRAM module for FPS-8
- XRF-1 RF cable, double screen 50+/-1ohm straight male SMA-N flexible cable
- SX-2 smart card for FPS-10/11
- DKU-2 USB cable
- SPI-1 PB-FREE SOLDER PASTE, 96SCLF300AGS85
- SRT-6 opening tool
- SPS-1 soldering paste spreader

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- SPS-2 soldering paste spreader
- Standard USB A-B cable (not available from Nokia)

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New Service Tools for RAE-6/RA-4

DA-21 docking station adapter

The DA-21 docking station adapter makes signal connections to the phone. JBV-1 and DA-21 are used as one unit.

JBV-1 main electric functions are:

- adjustable VBATT calibration voltage, current measurement limit voltage ”VCHAR”, current measurement calibration current ”ICHAR”
- adjustable ADC calibration voltage via BTEMP and BSI signal
- BSI calibration resistor
- signals from FBUS to the phone via parallel jig
- control via FBUS or USB
- flash OK/FAIL indication

View of DA-21

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Module jig MJ-20

Module jig MJ-20 is designed for module level testing. It can be used for testing at engine level for the following:

- flashing
- RF
- battery
- system
- display
- keyboard
- USB
- SIM/MMC reader

View of MJ-20

Test patterns of MJ-20

Table 1: Signal description of the UI flex test pattern

Pin	Signal	Pin	Signal
n.c.	n.c.	**n.c.**	n.c.
n.c.	n.c.	1	**GND** (Ground)
2	**GND** (Ground)	3	**V18** (Supply voltage 1.8V)
4	**V28** (Supply voltage 2.8V)	5	**APE_GPIO(12)** (RESX for CMT display)

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Pin	Signal	Pin	Signal
6	**EARN** (Audio signal for earpiece)	7	**EARP** (Audio signal for earpiece)
8	**PWRONX** (Power-on-signal)	9	**ROW0** (Row-line of keyboard matrix)
10	**UWIRE(4)** (CS for PDA display)	11	**UWIRE(3)** (CSX for CMT display)
12	**ROW2**	13	**ROW1**
14	**UWIRE(2)** (SCL for CMT and PDA display)	15	**UWIRE(1)** (SDA for CMT and SDIN for PDA display)
16	**UWIRE(0)** (DOUT for PDA display)	17	**ROW3**
18	**ROW4**	19	**GND** (Ground)
20	**GND** (Ground)	21	**GND** (Ground)
22	**GND** (Ground)	23	**COL5** (Column-line of keyboard matrix)
24	**COL4**	25	**COL3**
26	**COL2**	27	**COL1**
28	**KLIGHT** (control signal for CMT LEDs)	29	**DRVEN** (LED driver enable)
30	**DLIGHT** (control signal for PDA display LEDs)	31	**VBAT** (supply voltage)
32	**VBAT** (supply voltage)	33	**APE_GPIO(13)** RESET for PDA display
34	**V28** (Supply voltage 2.8V)	35	**LCD(10)** (Green5)
36	**LCD(0)** (Blue0 RGB data for PDA display)	37	**LCD(1)** (Blue1 RGB data for PDA display)
38	**LCD(2)** (Blue2 RGB data for PDA display)	39	**LCD(3)** (Blue3 RGB data for PDA display)
40	**LCD(19)** (DE for PDA display)	41	**GND** (Ground)
42	**GND** (Ground)	43	**GND** (Ground)
44	**GND** (Ground)	45	**LCD(18)** (VSYNCH for PDA display)
46	**LCD(17)** (HSYNCH for PDA display)	47	**LCD(4)** (Blue4 RGB data for PDA display)
48	**LCD(9)** (Green4 RGB data for PDA display)	49	**LCD(8)** (Green3 RGB data for PDA display)
50	**LCD(11)** (Red0 RGB data for PDA display)	51	**LCD(16)** (PCLK for PDA display)
52	**LCD(7)** (Green2 RGB data for PDA display)	53	**LCD(6)** (Green1 RGB data for PDA display)
54	**LCD(12)** (Red1 RGB data for PDA display)	55	**LCD(13)** (Red2 RGB data for PDA display)
56	**LCD(14)** Red3 RGB data for PDA display)	57	**LCD(15)** (Red4 RGB data for PDA display)
58	**LCD(5)** (Green0 RGB data for PDA display)	59	**GND** (Ground)
60	**GND** (Ground)	61	**GND** (Ground)

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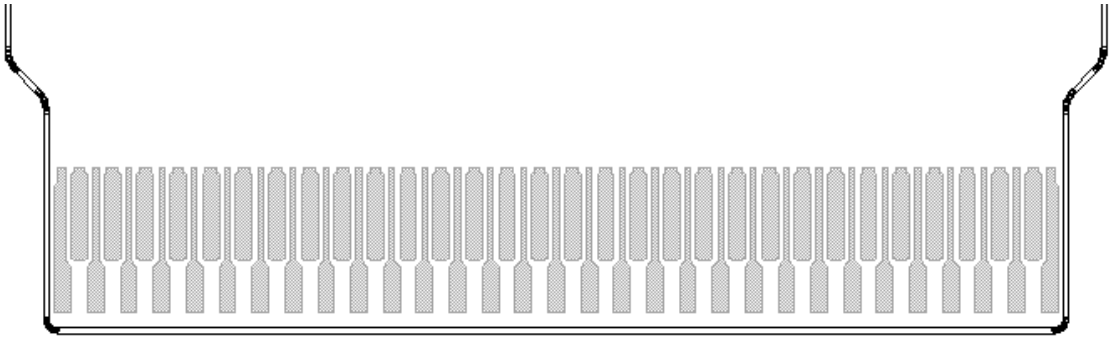
Figure 1: Pin order of UP module connector X100



Interface signals QWERTY flex test pattern

In the following table all the signals on ZIF connector are described. On 1CP module there is no physical connector component, but a pad area corresponding to the connector on the engine PWB.

Pin	Signal name	Signal description	Pin	Signal name	Signal description
n.c	n.c	n.c	1	GND	PWB ground signal
2	GND	PWB ground signal	3	GND	PWB ground signal
4	IHF1	Internal hands free audio signal	5	IHF1	Internal hands free audio signal
6	IHF2	Internal hands free audio signal	7	IHF2	Internal hands free audio signal
8	GND	PWB ground signal	9	COL 6	Keyboard matrix signal
10	COL 7	Keyboard matrix signal	11	COL 5	Keyboard matrix signal
12	COL 3	Keyboard matrix signal	13	COL 4	Keyboard matrix signal
14	ROW 7	Keyboard matrix signal	15	COL 1	Keyboard matrix signal
16	ROW 6	Keyboard matrix signal	17	ROW 0	Keyboard matrix signal
18	COL 2	Keyboard matrix signal	19	COL 0	Keyboard matrix signal
20	ROW 1	Keyboard matrix signal	21	ROW 2	Keyboard matrix signal
22	ROW 3	Keyboard matrix signal	23	ROW 4	Keyboard matrix signal
24	ROW 8	Keyboard matrix signal	25	ROW 5	Keyboard matrix signal
26	ROW 10	Keyboard matrix signal	27	ROW 11	Keyboard matrix signal
28	ROW 9	Keyboard matrix signal	29	LHALL	Hall sensor output signal
30	VKBC	Supply voltage from engine PWB	31	GND	PWB ground signal
32	GND	PWB ground signal	33	GND	PWB ground signal

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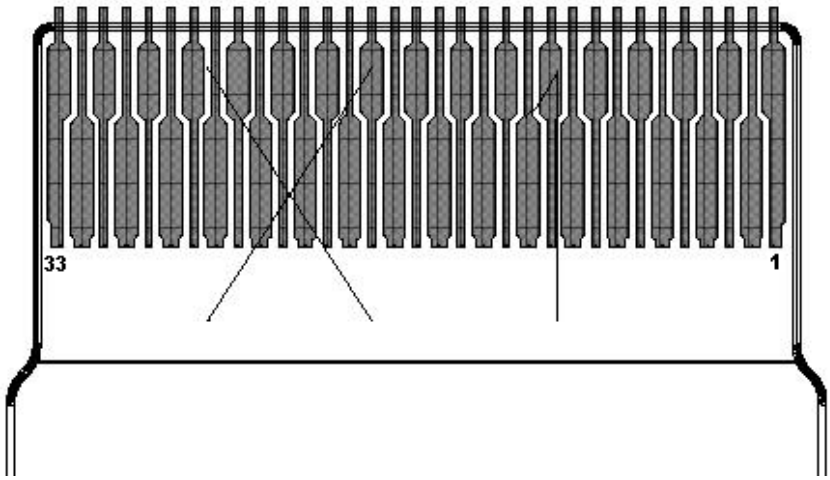
Figure 2: Pin order of the connector



SF-24 POS flash adapter

SF-24 POS flash adapter is used in POS (Point of Sales) environment for software updates. It provides controlled supply voltage and necessary connections between the phone and the flash prommer. It substitutes for the phone's standard battery during the software update.

Voltage limits: 3.6 - 4.2V

View of SF-24

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ST-27 rework stencil

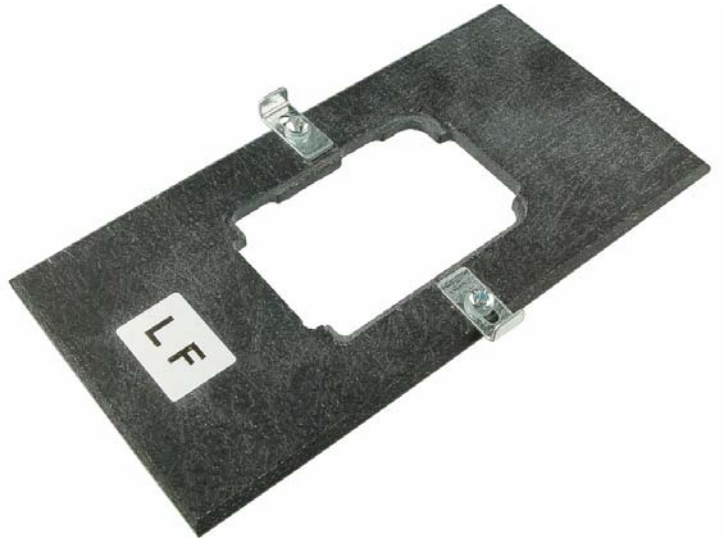
ST-27 is a LGA rework stencil used with RJ-46 and component Z7600.

View of ST-27

RJ-28 soldering jig

RJ-28 soldering jig is used for soldering and as a rework jig for 1BC engine module.

View of RJ-28



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SA-61 RF coupler

SA-61 is a coupler for RF testing. SA-61 is used with DA-21. For RAE-6 and RA-4.

View of SA-61

SS-56 display alignment jig

SS-56 is a display alignment jig used for PDA display alignment.

View of SS-56

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Re-used Service Tools

RJ-21 rework jig

Rework jig for N7700.

View of RJ-21

RJ-46 rework jig

RJ-46 is used for LGA type component reworking purposes.

View of RJ-46

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RJ-71 rework jig

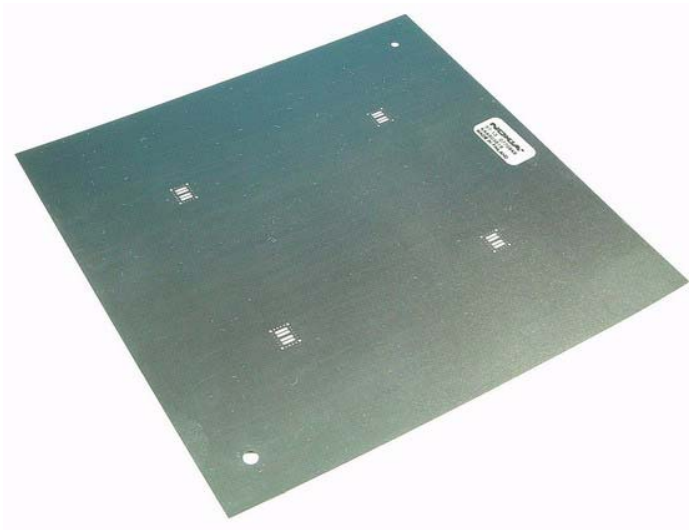
Rework jig for N7700.

View of RJ-71

ST-13 rework stencil

Stencil for N7700.

View of ST-13



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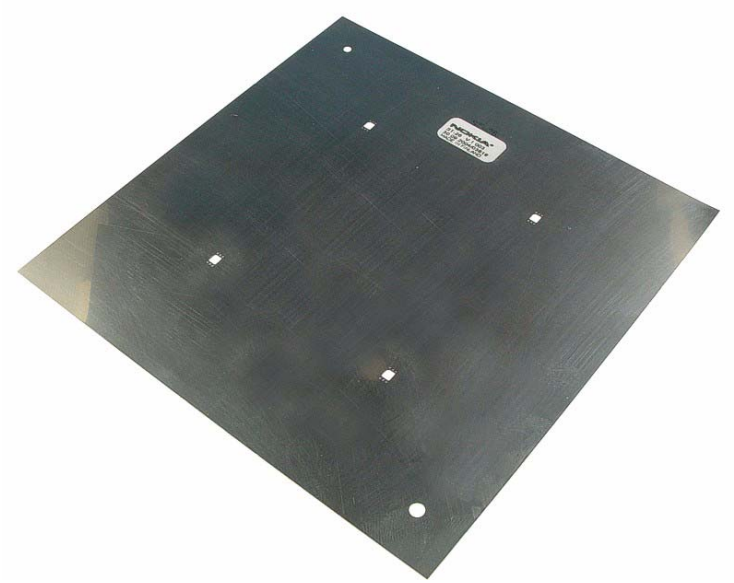
ST-26 rework stencil

Stencil for N4200.

View of ST-26



JBV-1 docking station

The JBV-1 docking station has been designed for calibration and software update use.

In calibration mode, JBV-1 is powered by an external power supply 11-16V DC. In flashing mode, power for the phone can be taken from FPS-8 or external power supply 11-16V DC.

View of JBV-1

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FPS-8 flash prommer

The flash prommer FPS-8 is used, for example, with SF-24, DA-21 and JBV-1. Power is supplied to FPS-8 from the universal power supply.

Sales pack includes:

- FPS-8 prommer
- FPS-8 SW activation & installation instructions
- FPS-8 activation sheet
- ACF-8 power supply
- AXS-4 service cable (D9-D9)
- Printer cable

View of FPS-8

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FPS-10 flash prommer

The flash prommer FPS-10 is used, for example, with SF-14, DA-21 and JBV-1. Power is supplied to FPS-8 from the universal power supply.

Sales pack includes:

- FPS-10 prommer
- FPS-10 SW activation & installation instructions
- FPS-8 activation sheet
- ACF-8 power supply
- AXS-4 service cable (D9-D9)
- Printer cable

View of FPS-10

FPS-11 flash prommer

8 x parallel flash prommer box

The parallel flash prommer FPS-8C is used for example with SF-14, DA-21 and JBV-1. Flash programming can be done to maximum of 8 phones parallel.

View of FPS-11

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JBT-9 test box

The JBT-9 test box is a generic device to perform Bluetooth Bit Error Rate testing and doing cordless FBUS connection via Bluetooth. An ACP-12x charger is needed for BER testing and AXS-4 cable in case of cordless testing interface usage.

Sales package includes:

- JBT-9 test box
- SMA stub antenna
- Installation and warranty information

Vies of JBT-9

FLS-4S POS flash prommer

POS flash prommer including ACF-8 power supply.

View of FLS-4S

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PKD-1 SW security device

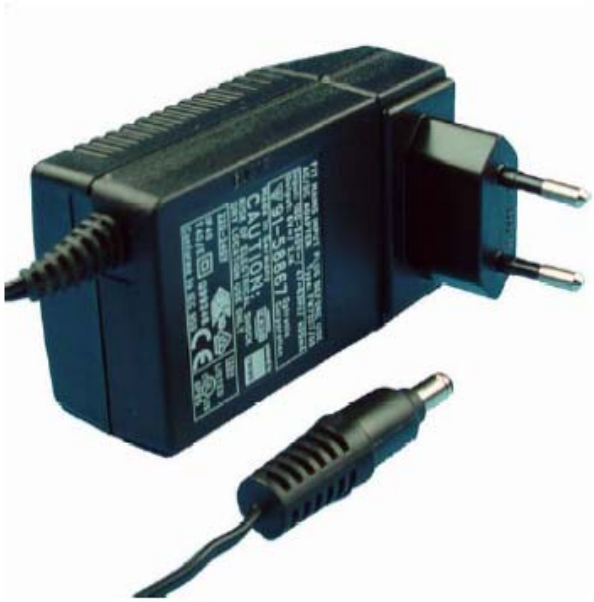
Software security dongle for service SW.

View of PKD-1

ACF-8 universal power supply

ACF-8 universal power supply is used to power FPS-8. ACF-8 has 6V DC and 2.1A output.

View of ACF-8



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ACP-12U charger (US)

- Output: 5.3V DC, 500 mA; US Version

View of ACP-12U

ACP-12E charger (Europe)

View of ACP-12E

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SPS-1 soldering paste spreader

View of SPS-1

SPS-2 soldering paste spreader

View of SPS-2

SRT-6 opening tool

View of SRT-6

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SX-2 smart card

Smart card for FPS-10/11.

View of SX-2

DAU-9S serial data cable

Serial data cable with modular connector.
9 pole Sub-D f <=> 8 pole modular
The MBUS cable DAU-9S has a modular connector and is used for example between the PC's serial port and module jig MJ-20.

View of DAU-9S

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XCS-4 modular cable

Modular cable for e.g. connection between FPS-8 and DA-21.
XCS-4 is a shielded (one specially shielded conductor) for flashing and service purposes.

View of XCS-4

FLC-2 power supply cable

Power supply cable from FPS-8 to SF-14.

Banana connectors to 3,5 mm DC plug, 1,2 meters.

FLC-2 is used to supply a controlled operating voltage.

View of FLC-2

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PCS-1 power cable

Power cable to connect e.g. JBV-1 to FPS-8.

2 x Banana connectors to 5,5 mm DC plug.

View of PCS-1

XRF-1 RF cable

RF cable to connect e.g. module repair jig to RF measurement equipment.

SMA to N-Connector ca. 610mm.

Attenuation for

- GSM850/900: 0.3+-0.1 dB
- GSM1800/1900: 0.5+-0.1 dB

View of XRF-1

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AXS-4 service cable

The AXS-4 D9-D9 service cable is used to connect two 9 pin D connectors e.g. between PC and FPS-8. Cable length is 2 meters.

View of AXS-4

CA-5S DC cable

DC cable for a phone to JBV-1 connection, used in EM calibration, for example.

View of CA-5S

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AXP-8 parallel printer cable

The parallel printer cable connects the parallel connector of the PC and the parallel input of the FPS-8.

View of AXP-8

DKU-2 connectivity cable

View of DKU-2

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CA-28DS service data cable

View of CA-28DS

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